Ozark Road Improvement Project
Watershed Resources (Soil, Water and Air) Working Paper
Hidden Springs Ranger District
Shawnee National Forest

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Introduction

This assessment analyzes the potential effects of the proposed Ozark Road re-surfacing and culvert replacement project on soil and associated watershed resources occurring within the boundaries of the Shawnee National Forest. The primary purpose of this assessment is to determine whether the likely effects would result in a degradation of watershed resources in the project area.

Formal objectives of this assessment include:

1) identify watershed resources that would be affected by the proposed project,
2) ensure that Forest Service actions do not result in degradation of soil quality, water quality or air quality,
3) provide a process and standard that ensures that watershed resources receive full consideration,
4) make certain that best management practices, as per the Shawnee National Forest Amended Land and Resource Management Plan (USDA 2006) and the Region 9 Soil Quality Standards, are followed,
5) To maintain a case file on actions regulated under environmental policy and procedures.

Purpose and Need for the Proposed Action

The purpose of this project is to execute a maintenance agreement with Pope County in order to allow the County Road District Number 2 to maintain and improve a section of Ozark Road. The improvement would accommodate the public traffic and to reduce future maintenance costs. The Ozark Road is one of the most highly used roads on the Forest. Paving this road would stabilize the road and lessen the sediment delivery to the adjacent stream systems.

Existing Environment

The project area is located adjacent to the Burden Falls Wilderness and about 1.7 miles of road is covered by this project. With a road prism of 20 and 2 foot shoulder, the project area encompasses about five acres.

Soil

The mileage in the Ozark Road Improvement project area is located on five soil mapping units. Soil mapping units on which the road (prism, shoulder and ten feet on both sides) are located are presented in Appendix A. Limitations for haul roads, soil erosion potential, and soil compaction potential are included in this table. The project road is located on relatively gentle slopes and would be rated as having slight limitations. Those ten foot buffer areas may be located on steeper slopes and would be rated as moderate to severe for erosion especially on roads. Nearly the entire project area is located on soil mapping units having a moderate to severe or severe potential for compaction.

Water

The Illinois Environmental Protection Agency (IEPA) 2012 Water Quality Report was consulted to assess the water quality of major streams in and adjacent to the project area. Beneficial use support (full support, non- support, not assessed), causes for less than full support, and sources of the cause are given for seven streams in Table 2 in Appendix A. Forest activities were not mentioned in this report as a source of concern. No streams were located on the project area.

Air

The Illinois Environmental Protection Agency air quality report was consulted on air quality (Illinois Environmental Protection Agency. 2011. Illinois Annual Air Quality Report – 2010 (http://www.epa.state.il.us/air/air-quality-report/2010/air-quality-report-2010.pdf). Since fall, 2009, prescribed fires on the Shawnee have been monitored for PM 2.5 using equipment provided by southern tier Region 9 Air Quality Specialist. Monitoring data from prescribed fires from 2012 are being analyzed but indications are that the PM 2.5 reading were well within ILEPA standards.

Atmospheric deposition is monitored in southern Illinois both in the past and to the present day. There were two monitoring stations in the National Atmospheric Deposition network (Carbondale and Dixon Springs). Overall, pH of atmospheric deposition is acidic but has been rising over the past few decades (becoming less acidic). Sulfates have deceased over the long term while nitrate and ammonia levels have fluctuated. (National Atmospheric Deposition Program (NADP), 2012). The Illinois EPA has developed a statewide Smoke Management Plan to address smoke from prescriptive fires (prairie and forest) used to achieve resource benefits. Prescribed fires on the Forest are in line with this plan and the Forest Plan. These treatments follow a detailed burn plan and strict prescription standards. Prescribed burns also are evaluated using smoke management models (V-Smoke and/or SASEM).

Alternative 1 - No Action Alternative

Under the No Action alternative, current management plans would continue to guide management of the project area. The Forest would not implement any action alternative considered.

Alternative 2 - Proposed Action

Under a road maintenance agreement the Forest would allow Pope County to maintain and improve Ozark Road (#402) from the intersection of the Delwood Road and Bell Smith Springs Road to the intersection of Appel Road in McCormick, about 1.7 miles. The work would include replacement of eight culvert pipes, clearing, brushing and adding gravel, with disturbance limited to the existing road corridor. The road would be upgraded to an oil and chip surface. Removal of brush and trees up to four inches DBH would occur during routine maintenance. A decision is expected by July, 2012 and the project would begin shortly thereafter.

Effects of the Proposed Action

Watershed resources would be affected. Sources of sediment on forest lands in the project area are likely. The facilities associated with transportation systems, mainly roads and trails can be a source of erosion and sediment under conditions. Road re-surfacing and culvert re-placement would expose bare soil which would lead to accelerated erosion and sedimentation in the short term (less than one year). Up to eight culverts will need replacement. The project area road is located along a ridge top and does not have areas with steep gradients; thus, the project area has minor erosion potential for sedimentation. Sediment would be slightly increased during the culvert replacement and road grading until vegetation becomes reestablished (a month or so). In the long-term sediment delivery to the stream system should be reduced by the oil and chip road surface. Continual grading, as is common on gravel roads would not be needed with a hard surface.

Because the road runs along the ridge top, it does not cross any ephemeral, intermittent or perennial streams. None of the area is located on soil mapping units identified as riparian soils. Nearly every soil mapping unit in the project area is located on soil mapping units identified as having moderate to severe potential for rutting and compaction (USDA 2006; Table 1, Appendix). During paving activities, a minor temporary decrease in air quality can be expected. This activity will likely result in an improvement in air quality as the paving reduces transportation dust in the area.

Cumulative Effects

The Cumulative Effects Area (CEA) for watershed resources for this project includes all of the watersheds in which the project occurs and includes the ten foot buffer on each side. These watersheds

and associated information are given in Tables 1 – 4 in the appendix. The time period for this analysis is five years.

Cumulative effects analyses takes in to account all known past actions, the proposed action, present actions, and reasonably foreseeable future actions which could or will impact the analyses area. Tables 1 - 4 in Appendix A give the ownership patterns in the CEA, occurrence of wilderness, national natural landmarks and natural areas. Because the short-term sediment increases are not beyond the normal amount of sediment generated by road maintenance activities no measurable cumulative impact is anticipated. Similarly, the small long-term sediment reduction is not likely to be a measurable improvement to any of the watersheds and would not have a cumulative effect. Implementation of the proposed action is expected to have no cumulative impacts on watershed resources within the analysis area provided the maintenance agreement is adhered to and proper maintenance is undertaken.

Literature Citations

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Appendix A

Table 1. Soil Mapping Units for the Ozark Road project (road prism with shoulder and 10 foot buffer on each side)

Soil Mapping Unit	Hydric	Suitability for Roads	Erosion Potential	Compaction Potential
Grantsburg silt loam, 2 – 5 %	Not hydric	Moderately suited	Slight off roads and trails, moderate on roads and trails	Severe
Grantsburg silt loam, 5 – 10 % eroded	Not hydric	Moderately suited	Slight off roads and trails, moderate on roads and trails	Severe
Grantsburg silt loam, 5 – 10 % severely eroded	Not hydric	Moderately suited	Slight off roads and trails, moderate on roads and trails	Severe
Grantsburg silt loam, 10 - 18 % eroded	Not hydric	Poorly suited	Moderate off roads and trails, severe off roads and trails	Severe
Grantsburg silt loam, 10 - 18 % severely eroded	Not hydric	Poorly suited	Moderate off roads and trails, severe off roads and trails	Severe
Wellston silt loam, 5 – 10 %	Not hydric	Poorly suited	Slight off roads and trails, moderate on roads and trails	Severe
Wellston silt loam, 10 - 18 %	Not hydric	Poorly suited	Moderate off roads and trails, severe off roads and trails	Severe
Wellston silt loam, 18 - 35 %	Not hydric	Poorly suited	Severe	Severe
Zanesville silt loam, 5 – 10 % eroded	Not hydric	Moderately suited	Slight off roads and trails, moderate on roads and trails	Severe
Zanesville silt loam, 5 – 10 % severely eroded	Not hydric	Moderately suited	Slight off roads and trails, moderate on roads and trails	Severe
Zanesville silt loam, 10 - 18 % eroded	Not hydric	Poorly suited	Moderate off roads and trails, severe off roads and trails	Severe
Zanesville silt loam, 10 - 18 % severely eroded	Not hydric	Poorly suited	Moderate off roads and trails, severe off roads and trails	Severe
Bonnie silt loam, 0 – 2 %, occasionally flooded	Hydric	Moderately suited	Slight	Severe
Burnside silt loam, 1 – 4 %, occasionally flooded	Not hydric	Poorly suited	Slight	Severe
Sharon silt loam, 0 – 3 %, occasionally flooded	Not hydric	Moderately suited	Slight	Severe
Muskingum channery silt loam &Berks channery loam, 18 – 35 %	Not hydric	Poorly suited	Moderate off roads and trails, severe off roads and trails	Severe
Wellston silt loam & Berks channery loam, 10 – 18 %	Not hydric	Poorly suited	Slight to Moderate off roads and trails, moderate to severe off roads and trails	Severe
Wellston silt loam & Berks channery loam, 18 - 35 %	Not hydric	Poorly suited	Moderate to severe off roads and trails; severe on roads and trails	Severe

Table 2 - Watershed Acres in project area (road prism with shoulder and 10 foot buffer on each side)			
Watershed Name	Acres in project area (road prism with shoulder and 10 foot buffer on each side)	Wild & Scenic	303d list
Little Bay Creek – Bay Creek	14.77	Y	Y
Little Lusk Creek – Lusk Creek	1.16	Y	Y
Little Saline River	10.82		
Old Channel River	1.99		
Cedar Creek	0.84		Y
Total	29.58		

Table 3. Ownership of the CEA (Cumulative Effects Analysis Area)				
Stream	Acres (total)	Acres (Forest Service)	Acres (other ownership)	% acreage in Forest Service jurisdiction
Little Bay Creek – Bay Creek	27,165	13,856	13,309	51.01
Little Lusk Creek – Lusk Creek	31,801	18,128	13,673	57
Little Saline River	20,922	8,007	12,915	38.27
Old Channel River	29,542	3,487	26,055	11.6
Cedar Creek	25,417	6.686	12,269	41.16
Total	134,847	50,164	78,221	37.20

Table 4. Wilderness, National Natural Landmarks, and Natural Area acreage in the CEA				
Stream	Wilderness (Acres)	National Natural Landmarks (Acres)	Experimental Research Areas	Natural Areas (Acres)
Little Bay Creek – Bay Creek	2,516	1,116	600	1,552
Little Lusk Creek – Lusk Creek	6,298	731		350
Little Saline River	3,854			168
Old Channel River				
Cedar Creek				472
Total	12,668	1,847	600	2,542